



Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet

1

of ~~100~~**Complete if Known**

Application Number	10/820,963
Filing Date	April 7, 2004
First Named Inventor	Li
Art Unit	2661 <i>266P</i>
Examiner Name	not yet assigned

Attorney Docket Number 012.P3004

**U. S. PATENT DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code <sup>2</sup> (if known)			
<i>BJ</i>	1	US- 4,635,063	01/06/1987	Chang et al.	
	2	US- 5,028,931	07/02/1991	Ward	
	3	US- 5,315,532	05/24/1994	Comon	
	4	US- 5,383,164	01/17/1995	Sejnowski et al.	
	5	US- 5,596,333	01/21/1997	Bruckert	
	6	US- 5,949,833	09/07/1999	Weerackody	
	7	US- 5,959,966	09/28/1999	Torkkola	
	8	US- 5,982,327	11/09/1999	Vook et al.	
	9	US- 6,018,317	01/25/2000	Dogan et al.	
	10	US- 6,128,276	10/03/2000	Agee	
	11	US- 6,160,839	12/12/2000	Zhang	
	12	US- 6,188,913	02/13/2001	Fukagawa et al.	
	13	US- 6,201,955	03/13/2001	Jasper et al.	
	14	US- 6,236,862	05/22/2001	Erten et al.	
	15	US- 6,298,082	10/02/2001	Harrison	
	16	US- 6,314,305	11/06/2001	Solondz et al.	
	17	US- 6,314,394	11/06/2001	Finn	
	18	US- 6,321,200	11/20/2001	Casey	
<i>BJ</i>	19	US- 6,370,129	04/09/2002	Huang	

**FOREIGN PATENT DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T <sup>6</sup>
		Country Code <sup>3</sup> -Number <sup>4</sup> -Kind Code <sup>5</sup> (if known)				
<i>BJ</i>	20	EP 1 152 548	07.11.2001	Lucent Technologies		
<i>BJ</i>	21	WO 94/29967	22.12.1994	The Salk Institute		
<i>CM</i>	22	WO 98/37638	27.08.1998	AT&T Wireless		
<i>CM</i>	23	WO 98/37654	27.08.1998	AT&T Wireless		
<i>CM</i>	24	WO 98/58450	23/12/1998	Clarity, LLC		
<i>CM</i>	25	WO 98/59450	30/12/1998	Motorola, Inc.		

Examiner Signature

*Blair J. Johnson*

Date Considered

06/16/07

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

**Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.**

Substitute for form 1449/PTO		<b>Complete if Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> <i>(Use as many sheets as necessary)</i>		Application Number	10/821,143 <i>10/820,963</i>
		Filing Date	April 7, 2004
		First Named Inventor	Li
		Art Unit	2631      2618
		Examiner Name	not yet assigned
		Attorney Docket Number	012.P3001

Sheet 2 of 5

## **INFORMATION DISCLOSURE STATEMENT BY APPLICANT**

*(Use as many sheets as necessary)*

**Complete if Known**

Application Number	10/821,143	10/820,963
Filing Date	April 7, 2004	
First Named Inventor	Li	
Art Unit	2631 - 2618	
Examiner Name	not yet assigned	
Attorney Docket Number	012-P3001	

B) 7/02

**U. S. PATENT DOCUMENTS**

## **FOREIGN PATENT DOCUMENTS**

FOREIGN PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear
		Country Code <sup>3</sup> -Number <sup>4</sup> -Kind Code <sup>5</sup> (if known)			
PJ	33	WO 99/10993	04.03.1999	Nokia Telecommunications	
	34	WO 99/55030	28.10.1999	Telecordia Tech.	
	35	WO 00/33526	08.06.2000	Ericsson, Inc.	
	36	WO 01/65725	07.09.2001	Nokia Networks OY	
	37	WO 02/093784	21.11.2002	Qualcomm Inc.	
PJ	38	WO 02/47286	13.06.2002	Nokia Corporation	

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.<sup>1</sup> Applicant's unique citation designation number (optional).<sup>2</sup> See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3).<sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.<sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible.<sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (Use as many sheets as necessary)		<b>Complete If Known</b>	
		Application Number	10/824,143 10/820,962
		Filing Date	April 7, 2004
		First Named Inventor	Li
		Art Unit	2631 2618
		Examiner Name	not yet assigned
Sheet	3	of	5
		Attorney Docket Number	042.P9004

B3  
7/07

NON PATENT LITERATURE DOCUMENTS				
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.		T <sup>2</sup>
Bn	39	TEW-AP100 11 Mbps Wireless Access Point Product Description; www.trendward.com/products/TEW-AP100.htm; 10/29/01; 4 pages.		
Yn	40	Compaq WL400 11 Mbps Wireless LAN Hardware Access Point Product Description; www.compaq.com/products/wireless/wlan/wl400-specifications.html; 10/29/01; 2 pgs.		
Yn	41	Wireless Protocols: ewd's Valhalla Series Wireless Processors; www.ewdi.com/dp.dpml?dplevel=2; 10/29/01; 2 pages.		
YZ	42	DIMITRIADIS et al.; "Enhanced Cellular Network Performance with Adaptive Coverage Based on Position Location of Mobile Terminals"; white paper; 4 pgs.		
YZ	43	GESBERT et al.; "Technologies and Performance for Non-Line-of-Sight Broadband Wireless Access Networks"; IEEE Communications Magazine; April 2002; pgs. 86-95.		
YZ	44	POON et al.; "Multiple-Antenna Channels From A Combined Physical and Networking Perspective"; white paper; 5 pages.		
YZ	45	BANA et al.; "Space Division Multiple Access (SDMA) for Robust ad hoc Vehicle Communication Networks"; The IEEE 4th Int'l. Conference on Intelligent Transportation Systems; white paper; 6 pages.		
BZ	46	PAULRAJ et al.; "Smart Antennas for Mobile Communications"; Encyclopedia for Electrical Engineering; John Wiley Pub.Co.; 2000; 15 pgs.		
YZ	47	OLSON, STEVEN C.; "Antenna Technologies for Wireless Solutions"; white paper/presentation; 9/10/98; 35 pages.		
B	48	"A Guide to IEEE 802.11b Wireless Networking Technology"; SMART Modular Technologies, Inc. 2001; 32 pages.		

Examiner Signature	<i>Brian J. Bush</i>	Date Considered	06/10/07
--------------------	----------------------	-----------------	----------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.  
 This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO		<b>Complete if Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <i>(Use as many sheets as necessary)</i>		Application Number	10/820,963
		Filing Date	April 7, 2004
		First Named Inventor	Li
		Art Unit	2681
		Examiner Name	not yet assigned
Sheet <i>4</i>	of <i>5</i>	Attorney Docket Number	
012.P3004			

<b>NON-PATENT LITERATURE DOCUMENTS</b>			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
<i>RL</i>	49	SARRIGEORGIDIS et al., "Massively Parallel Wireless Reconfigurable Processor Architecture and Programming", white paper, 8 pages.	
<i>M</i>	50	MAEDA et al., "Blind Signal Separation Via Simultaneous Perturbation Method", white paper, 4 pages.	
<i>M</i>	51	RABAETY, Jan M., "Silicon Architectures for Wireless Systems-Part 1", Berkeley Wireless Research Center white paper, 52 pages.	
<i>M</i>	52	RABAETY, Jan M., "Silicon Architectures for Wireless Systems-Part 2 Configurable Processors", Berkeley Wireless Research Center white paper, 66 pages.	
<i>M</i>	53	RABAETY, Jan M.; "Wireless Beyond the Third Generation-Facing the Energy Challenge"; Berkeley Wireless Research Center; ISLPED 2001, Huntington Beach; 38 pages.	
<i>M</i>	54	Micronet SP900 Series RadioLink Wireless LAN Product Information Sheet; March 2001; 4 pages.	
<i>M</i>	55	DEVLIN, MALACHY Ph.D.; "How to Make Smart Antenna Arrays"; Xcell Journal; Spring 2003, 4 pages.	
<i>M</i>	56	"Smart Antenna Technology and Applications" Symposium Presentation, 40 pages.	
<i>M</i>	57	ELLINGSON et al., "Open Loop Forward Link Beamforming with Diversity Switching", IEEE Transactions on Vehicular Technology, April 30, 2001, 22 pages.	
<i>M</i>	58	TEHRANI, ARDAVAN MALEKI, "Space-Time Coding Over a Code Division Multiple Access System", IEEE 1999, pgs. 134-138.	

Examiner Signature	<i>Blair L. Johnson</i>	Date Considered	06/10/07
--------------------	-------------------------	-----------------	----------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.  
 This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO:  
 Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO		<b>Complete If Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> <i>(Use as many sheets as necessary)</i>		Application Number	10/820,963
		Filing Date	April 7, 2004
		First Named Inventor	Li
		Art Unit	2687 2610
		Examiner Name	not yet assigned
Sheet	5 35	of	5 35
		Attorney Docket Number	012.P3004

NON PATENT LITERATURE DOCUMENTS				
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.		T <sup>2</sup>
b	59	POON et al., "An Adaptive Multi-Antenna Transceiver for Slowly Flat Fading Channels", white paper, 3/13/02, 20 pages.		
tj	60	LACKPOUR, et al., "Architecture and Predicted Performance of an IEEE 802.11b-like WMAN Transceiver at 5.8GHz", white paper, 7 pages.		
mz	61	LIU, et al., "A System-Theoretic Foundation For Blind Signal Separation of Mimo-Fir Convulsive Mixtures - A Review", white paper, 7 pages.		
ov	62	KELLY, RYAN, "A Space Division Multiple Access System - An Analysis and Prototype Proposal, ENEL 698 Final Project Report, 12/17/97, 66 pgs.		

Examiner Signature	<i>Brian J. Johnson</i>	Date Considered	06/10/07
--------------------	-------------------------	-----------------	----------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.  
 This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO:  
**Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.